The Claims:

This listing of claims will replace all prior version, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) A tunable optical filter comprising:

a plurality of electroholographic (EH) gratings, said EH gratings being optically connected such that an input optical signal can pass through at least one of said plurality of EH gratings, wherein said EH gratings are activated to filter said input optical signal in response to an applied voltage, said plurality of EH gratings including EH gratings with different center wavelengths and EH gratings with the same center wavelengths.

2. (original) The tunable optical filter of claim 1 further including:

electrode pairs associated with said EH gratings for applying voltage across EH gratings of a desired center wavelength to activate said EH gratings with said desired center wavelength; and

a voltage controller associated with said electrode pairs for controlling the application of voltage across said EH gratings by the respective electrode pairs.

3. (original) The tunable optical filter of claim 2 wherein EH gratings of the same center wavelength are controlled simultaneously by said voltage controller.

4. (original) The tunable optical filter of claim 1 wherein said EH gratings are tunable over a range of wavelengths in response to adjustments in the applied voltage.

5. (original) The tunable optical filter of claim 4 wherein the tunable wavelength ranges of said EH gratings combine to form a continuously tunable wavelength range.

6. (original) The tunable optical filter of claim 1 wherein at least two of said EH gratings having different center wavelengths are optically connected such that an input signal can pass through said at least two EH gratings in series.

7. (original) The tunable optical filter of claim 1 further including:

an input birefringent element, located in an optical path that is before said plurality of EH gratings, for splitting said input optical signal into first and second polarized beams having different polarization states before said input optical signal passes through said plurality of EH gratings;

wherein said plurality of EH gratings includes a first group of EH gratings having different center wavelengths that are optically connected such that said first polarized beam can pass through said first group of EH gratings and a second group of EH gratings having the same center wavelengths as said first group of EH gratings that are optically connected such that said second polarized beam can pass through said second group of EH gratings, said first and second polarized beams passing through the respective groups of EH gratings in parallel.

8. (original) The tunable optical filter of claim 1 wherein said EH gratings are formed in photorefractive crystals.

9. (previously presented) The tunable optical filter of claim 1 wherein said plurality of EH gratings are formed as a chirped EH grating that can be activated at different center wavelengths by applying different voltages across said chirped EH grating.

10. (original) The tunable optical filter of claim 1 further including:

an input birefringent element, located in an optical path that is before said plurality of EH gratings, for splitting said input optical signal into first and second polarized beams having different polarization states before said input optical signal passes through said plurality of EH gratings;

an input polarization rotator, located in an optical path that is between said input birefringent element and said plurality of EH gratings, for bringing said first and second polarized beams to the same polarization state;

an output birefringent element, located in an optical path that is after said plurality of EH gratings, for combining said first and second polarized beams into an output signal after said first and second polarized beams have passed through said plurality of EH gratings; and

an output polarization rotator, located in an optical path that is between said plurality of EH gratings and said output birefringent element, for bringing said first and second polarized beams to different polarization states.

11. (original) The tunable optical filter of claim 10 wherein a first set of electroholographic filter elements (EFEs), which includes a first group of said EH gratings, are aligned to filter said first polarized beam and a second set of EFEs, which includes a second group of said EH gratings are aligned to filter said second polarized beam.

12. (original) The tunable optical filter of claim 10 wherein said input polarization rotator includes a half-wave plate that rotates the polarization state of one of said first and second polarized beams by ninety degrees.

13. (original) The tunable optical filter of claim 10 wherein said output polarization rotator includes a half-wave plate that rotates the polarization state of one of said first and second polarized beams by ninety degrees.

14. (original) The tunable optical filter of claim 1 further including polarization rotators located between EH gratings that have the same center wavelength.

15. (canceled)

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25. (canceled)

26. (canceled)

27. (previously presented) A tunable optical filter comprising:

a plurality of electroholographic (EH) gratings with different center wavelengths, said EH gratings being optically connected such that an input optical signal can pass through at least one of said plurality of EH gratings, wherein said EH gratings are activated to filter said input optical signal in response to an applied voltage;

wherein said EH gratings are tunable over a range of wavelengths in response to adjustments in the applied voltage.

28. (previously presented) The tunable optical filter of claim 27 wherein the tunable wavelength ranges of said EH gratings combine to form a continuously tunable wavelength range.

29. (previously presented) A tunable optical filter comprising:

a plurality of electroholographic (EH) gratings, said EH gratings being optically connected such that an input optical signal can pass through at least one of said plurality of EH gratings, wherein said EH gratings are activated to filter said input optical signal in response to an applied voltage; and

an input birefringent element, located in an optical path that is before said plurality of EH gratings, for splitting said input optical signal into first and second polarized beams having different polarization states before said input optical signal passes through said plurality of EH gratings;

wherein said plurality of EH gratings includes a first group of EH gratings having different center wavelengths that are optically connected such that said first polarized beam can pass through said first group of EH gratings and a second group of EH gratings having the same center wavelengths as said first group of EH gratings that are optically connected such that said second polarized beam can pass through said second group of EH gratings, said first and second polarized beams passing through the respective groups of EH gratings in parallel.

30. (previously presented) A tunable optical filter comprising:

a plurality of electroholographic (EH) gratings with different center wavelengths, said EH gratings being optically connected such that an input optical signal can pass through at least one of said plurality of EH gratings, wherein said EH gratings are activated to filter said input optical signal in response to an applied voltage;

wherein said plurality of EH gratings are formed as a chirped EH grating that can be activated at different center wavelengths by applying different voltages across said chirped EH grating.

31. (previously presented) A tunable optical filter comprising:

a plurality of electroholographic (EH) gratings, said EH gratings being optically connected such that an input optical signal can pass through at least one of said plurality of EH gratings, wherein said EH gratings are activated to filter said input optical signal in response to an applied voltage, said plurality of EH gratings including EH gratings with different center wavelengths and EH gratings with the same center wavelengths; and

polarization rotators located between EH gratings that have the same center wavelength.